

The presently claimed invention relates to a process for the emulsion synthesis of blocked (poly)isocyanates, to the emulsions thus obtained, to their use in order to make compositions which are useful for coating surfaces and to the coatings thus obtained. See specification at page 1, lines 4-7.

Tirpak et al. relates to an improved process for the preparation of aqueous dispersions containing both blocked polyisocyanates and polyhydroxyl compound. See Tirpak et al. at column 1, lines 11-15.

Tirpak et al. does not disclose or fairly suggest each feature of the presently claimed invention. For example, Tirpak et al. fails to disclose or fairly suggest a process for preparing an emulsion of blocked (poly)isocyanates, a composition prepared by such a process, a method of coating using such an emulsion or a coating prepared by such a process as set forth, for example, in claim 1, 29, 46, 60 and 61.

In particular, the present invention relates to a process for preparing aqueous emulsions of blocked (poly)isocyanates wherein an isocyanate composition containing free isocyanate functions is contacted with at least one blocking agent A in the presence of a surfactant B and an aqueous phase. Further, the objectives of the present invention include blocking and emulsifying in a single reaction step; employing a low quantity of solvent or no solvent and employing a low quantity of surfactant. See specification at page 3, lines 17-21.

Tirpak et al. is radically different from the present invention. Indeed, Tirpak et al. is directed to preparing blocked (poly)isocyanates dispersed in water. See Tirpak et al., for example, at column 1, lines 18-29. Additionally, Tirpak et al. itself discloses that it is very

difficult or impossible to disperse blocked (poly)isocyanates in water without an organic solvent. See Tirpak et al., for example, at column 1, lines 20-30.

Further, Tirpak et al. discloses that dispersing a polyisocyanate in water prior to reacting the polyisocyanate with a blocking agent requires an additional step of blending the isocyanate reactive compounds with the blocked polyisocyanate. See Tirpak at col. 1, lines 52-55. As a solution to these problems, Tirpak et al. discloses avoiding the additional mixing step by combining a co-reactant with the blocked polyisocyanate for preparing the aqueous dispersion. See Tirpak et al. at column 1, lines 56-60. Accordingly, Tirpak et al. discloses dispersing a polyisocyanate composition in water in a first step and then blocking the water-dispersed polyisocyanate composition in a second step. See column 4, lines 60-65 and Examples 2, 3 and 4 of Tirpak et al.

Accordingly, Applicants submit that the invention of Tirpak et al. is totally contrary to the presently claimed invention, wherein the dispersing and blocking reactions are conducted in a single step.

For at least these reasons, the presently claimed invention is not anticipated by Tirpak et al. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1-44 and 46-66 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tirpak et al. in view of Yasuda et al. (EP 367667). For at least the reasons that follow, withdrawal of the rejection is in order.

For at least all of the reasons set forth above with respect to the §102(b) rejection over Tirpak et al., Applicants submit that the presently claimed invention also would not

have been obvious over Tirpak et al. That is, as discussed above, while the present invention achieves blocking and water-dispersing polyisocyanate in a single reaction step, Tirpak et al. discloses separate dispersing and blocking steps.

Yasuda et al. fails to overcome the above deficiencies of Tirpak et al.

Yasuda et al. relates to a new polyurethane resin containing at least one phosphoric acid group and its use in a magnetic coating formulation and a magnetic recording medium. The magnetic recording medium can include, for example, magnetic tapes, magnetic discs, magnetic cards and the like. See Yasuda et al. at page 2, lines 1-3.

Yasuda et al. discloses using phosphoric-acid-modified polyurethane resin as a dispersion material for magnetic particles. However, the combination of this teaching with the teachings of Tirpak et al. does not render obvious the single step reaction process of blocking and emulsifying, the compositions obtained by this process, methods of coating using such an emulsion or coatings prepared by this process as claimed.

With respect to the rejection of claims 42-44 over the above combination, Applicants find no comments in the Official Action that provide a basis for the rejection of these claims over Tirpak in view of Yasuda. Accordingly, Applicants assume that these claims were not intended to be included in this rejection. However, Applicants submit that since neither Tirpak nor Yasuda disclose or suggest a plant for carrying out the claimed process, claims 42-44 would not have been obvious over the asserted combination.

For at least these reasons, the presently claimed invention would not have been obvious over the combination of Tirpak et al. in view of Yasuda et al. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Claims 42-44 stand rejected under 35 U.S.C. §102(b) as being anticipated by Anand et al. (U.S. Patent No. 5,037,864) and Markusch et al. (U.S. Patent No. 4,879,322). For at least the reasons that follow, withdrawal of the rejection is in order.

The Official Action again asserts that the Figures in each of the above patents disclose each and every limitation of the invention of claims 42-45. Applicants again respectfully disagree with this position.

As previously explained, the plant defined in claims 42-45 is explicitly defined as comprising means for recirculating the aqueous phase in the form of a masked polyisocyanate emulsion. Additionally, dependent claim 45 further defines the recirculation means as comprising a recirculation loop. The recirculation loop is useful for circulating the aqueous phase in the form of a masked polyisocyanate emulsion. The specification further discloses at page 35, line 29 to page 36, line 8 explains that the recirculation of the fluids occurs within the recirculation loop. In other words, the content of tank (7) passes through regulating pump (16), then through colloidal mill (1) and static mixer (15) and is finally re-injected into tank (7).

Upon reviewing the above cited references, Applicants can find absolutely no disclosure or suggestion of such a recirculation loop. Furthermore, reversing the pumps, as the Examiner has suggested, does not serve to create a recirculation loop, as claimed. That is, reversing the pumps in the manner suggested by the Examiner will not create a closed circuit in which a fluid circulates. Instead, in order to achieve the claimed recirculation loop one would have to provide a connectivity line, for example, between tube (14) and tube (17) in the drawing of Markusch et al.. However, as there is neither a

disclosure nor a suggestion in either of the cited references to provide such a connectivity line, one cannot say that it would have been obvious to make such a modification to arrive at the presently claimed invention.

For at least the above reasons, neither Anand et al. nor Markusch et al. anticipates the invention of claims 42-44. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

From the foregoing, Applicants earnestly solicit further and favorable action in the form of a Notice of Allowance.

If there are any questions concerning this paper or the application in general, Applicants invite the Examiner to telephone the undersigned at the Examiner's earliest convenience,

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By:



Martin A. Bruehs
Registration No. 45,635

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620

Date: September 23, 2002